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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WERNER, DAVID N

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/736,955	Applicant(s) XU ET AL.	
	Examiner David N. Werner	Art Unit 2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☒ Claim(s) 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 August 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20080814</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office action for US Patent Application 10/736,955 is responsive to communications filed 31 October 2008 and the personal interview of 21 October 2008, in reply to the Non-Final Rejection of 38 July 2008. Currently, claims 1-36 are pending.

2. In the previous Office action, claims 10-18 and 28-36 were rejected under 35 U.S.C. 101 as non-statutory. Claims 1-5, 7-14, 16-23, 25-32, and 34-36 were rejected under 35 U.S.C. 102(e) as anticipated by US Patent Application Publication 2003/0002579 A1 (Radha et al.). Claims 6, 15, 24, and 33 were rejected under 35 U.S.C. 103(a) as obvious over Radha et al. in view of US 5,742,343 A (Haskell et al.).

Response to Amendment

3. Applicant's amendment to the claims is sufficient to overcome the rejections of claims 10-18 and 28-36 under 35 U.S.C. section 101.

Response to Arguments

4. Applicant's arguments with respect to claims 1, 10, 19, and 28 have been considered but are moot in view of the new ground(s) of rejection. It is respectfully submitted that US Patent Application Publication 2003/0058931 A1 (Zhang et al.), in combination with the previously-cited references, characterizes the present invention more clearly than the previously-cited references alone.

Claim Objections

5. Claim 31 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The phrase "computing device" should be amended to read "computer-readable memory storage device", as in claims 29, 30, and 32.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 1-9 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Supreme Court precedent¹ and recent Federal Circuit decisions² indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim(s) recite a series of steps or acts to be performed, the claims neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. In the

¹ *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 US 780, 787-88 (1876).

² *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

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present invention, nowhere in the method claims is it stated what apparatus performs the claimed steps.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-5, 7-14, 16-23, 25-32, and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Application Publication 2003/0058931 A1 (Zhang et al.) in view of US Patent Application Publication 2003/0002579 A1 (Radha et al.). Zhang et al. teaches a method of transcoding scalable video comprising a base layer and enhancement layer. Regarding independent claim 1, figure 5 of Zhang et al. illustrates the transcoder system. An FGS encoder 510 encodes input video 501 to a base layer video 511 and an input enhancement layer video 512. (paragraph 0048) In transcoding, enhancement layer 512 is transcoded in transcoder 540 to output enhancement layer video 519, without transcoding base layer 511 (paragraph 0050). The transcoded enhancement layer 519 and original base layer 511 may be stored on a disc or transmitted over a network (paragraph 0051). Then, transcoder 540 performs the claimed step of "decoding an enhancement layer bitstream without decoding an encoded base layer bitstream". This transcoding is performed

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based on minimizing distortion for a current available bitrate (paragraph 0054), and adjusts rate budget $W(a)$ based on network conditions (paragraph 0073). Then, Rate-Distortion Extractor 520 performs the claimed step of "determining data throughput characteristics of a network coupled to a client computing device", and "calculating a new HQRB", where $W(a)$ is the HQRB. Then, transcoder 540 which produces the new enhancement layer bitstream performs the claimed step of "encoding the enhancement layer bitstream".

The present invention differs from Zhang et al. in that the present invention determines the new HQRB as the difference between network bandwidth and encoded base layer bandwidth, whereas Zhang calculates a bit rate for the video as a whole, without separating base layer and enhancement layer throughputs.

Radha et al. teaches a system for transmitting video over a variable-bandwidth network, in which the video, comprising a base layer and enhancement residual layers, may change coding according to variable bandwidth. Regarding claim 1, in Radha et al., a selected enhancement layer bitstream is encoded at a rate $R(\text{MAX}) - R(\text{BL})$ (paragraph 0049), in which $R(\text{MAX})$ is the maximum available network bandwidth (paragraph 0040) and $R(\text{BL})$ is the bitrate of an encoded base layer (paragraph 0041). If available bandwidth is reduced to a smaller value R less than $R(\text{MAX})$, the transmitter adjusts to output an enhancement layer of bandwidth $R - R(\text{BL})$ (paragraph 0051). Then $R - R(\text{BL})$ is the claimed "difference between the data throughput characteristics of the network and a bit rate of the encoded base layer".

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Zhang et al. discloses the claimed invention except for determining bit rate of an enhancement layer as the difference between available bit rate and base layer bit rate. Radha et al. teaches that it was known in the art to provide this determination of bitrate. Therefore, it would have been obvious to one having ordinary skill in the art at the time the present invention was made to substitute the enhancement layer bitrate determination control of Radha et al. for the bitrate determination control of Zhang et al. with the predictable result of producing "a coded residual image which is most appropriate for the available bandwidth" (paragraph 0012), since it has been held that simple substitution of one element in the art for another to obtain predictable results only involves routine skill in the art. *In re Fout*, 675 F.2d 297, 301, 213 USPQ 532, 536 (CCPA 1982); *In re O'Farrell*, 853 F.2d 894, 7 USPQ2d 1673 (Fed. Cir. 1988); *Ruiz v. AB Chance Co.*, 357 F.3d 1270, 69 USPQ2d 1686 (Fed. Cir. 2004); *Ex Parte Smith*, 83 USPQ 2d 1509 (BPAI 2007).

Regarding independent claims 10, 19, and 28, Radha et al. operates on a personal computer (paragraphs 0032-0035).

Regarding claims 2, 11, 20, and 29, as previously mentioned, the enhancement layer rate selection control in Radha et al. was designed to produce the enhancement layer "most appropriate for the available bandwidth" (paragraph 0012).

Regarding claims 3, 12, 21, and 30, Zhang et al. operates on FGS-encoded video (paragraphs 0018–0019).

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Regarding claims 4, 13, 22, and 31, in Radha et al., when a receiver bandwidth decreases, an enhancement layer of residual images having a lower bit rate is selected, and regarding claims 5, 14, 23, and 32, in Radha et al., when a receiver bandwidth increases, an enhancement layer of residual images having a higher bit rate is selected (paragraph 0014).

Regarding claims 7, 16, 25, and 34, in Zhang et al., the base layer 511 and transcoded enhancement layer 512 may be "transmitted through a network 550 synchronously as they are transcoded" (paragraph 0051).

Regarding claims 8, 17, 26, and 35, in Zhang et al., FGS encoder 510 performs the encoding of the base layer and original input enhancement layer (paragraph 0048).

Regarding claims 9, 18, 27, and 36, in Radha et al., a maximum bit rate may be determined based on if "the receiving device has sufficient processing power to handle those additional frames" produced at a higher bit rate (paragraph 0005).

10. Claims 6, 15, 24, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. in view of Radha et al., and in view of US Patent 5,742,343 A (Haskell et al.). Claims 6, 15, 24, and 33 of the present invention teach encoding enhancement layers from motion vectors derived from a base layer. In contrast, the enhancement layer transcoding in Zhang et al. appears to be independent of the base layer (figure 5).

Haskell et al. teaches a scalable video encoder and decoder. Regarding claims 6, 15, 24, and 33, in Haskell et al., the embodiment in figure 20, showing an encoder having a base encoder and an enhancement encoder, is exemplary. In the enhancement encoder, motion estimator 640 compares an enhancement layer frame with a base layer prediction frame, and uses the base layer pels and motion vectors to output enhancement layer motion vectors to motion compensation with a previous enhancement frame (column 12: lines 9-31). By placing this motion compensation system in transcoder 540 of Zhang et al., the present invention is achieved.

Zhang et al., in combination with Radha et al., discloses the claimed invention except for using base-layer motion vectors to encode an enhancement layer in a video coder. Haskell et al. teaches that it was known to perform motion compensation in an enhancement coder from base level motion vectors. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the enhancement layer motion compensation system of Haskell et al. into the enhancement layer transcoder of Zhang et al., since Haskell et al. states in column 29: lines 1-29 that such a modification would increase accuracy of coding enhancement layer data by increasing the number of available sources for motion compensation.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David N. Werner whose telephone number is

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(571)272-9662. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri, can be reached on (571) 272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. N. W./

Examiner, Art Unit 2621

/Mehrdad Dastouri/

Supervisory Patent Examiner, Art Unit 2621